

## CLAIMS

1. A composition of hydrocarbon fuel, in the low vapor pressure range to very low vapor pressure range, and carbon dioxide (CO<sub>2</sub>) wherein the concentration of CO<sub>2</sub> within the fuel is sufficient in volume to achieve a substantial reduction in exhaust soot particulate when the fuel is consumed by engine combustion.
2. A composition of hydrocarbon fuel, in the low vapor pressure range to very low vapor pressure range, wherein commercial grade of recycled carbon dioxide CO<sub>2</sub> is used and wherein the concentration of CO<sub>2</sub> within the fuel is sufficient in volume to achieve a substantial reduction in exhaust soot particulate during engine combustion.
3. The composition of claim 1 and 2 wherein said CO<sub>2</sub> is mixed under normal temperature and pressure within said fuel. and the CO<sub>2</sub> does not react chemically with the fuel.
4. The composition of claim 1 and 2 wherein the combination of said fuel and said CO<sub>2</sub> is employed to improve fuel economy.
5. The composition of claim 4 wherein the combination of said fuel and said CO<sub>2</sub> is employed to provide a net reduction in CO<sub>2</sub> production in engine exhaust.
6. The composition of claim 1 and 2 wherein the combination of said fuel and said CO<sub>2</sub> is employed to provide a net fuel cost savings.
7. The composition of claim 1 and 2 wherein the combination of said fuel and said CO<sub>2</sub> is employed to reduce fuel viscosity without entering into a chemical reaction.
8. A composition of: liquid hydrocarbon fuel, in the low vapor pressure to very low vapor pressure range, and carbon dioxide CO<sub>2</sub>: wherein the concentration of CO<sub>2</sub> within the fuel is less than 1 atmosphere of pressure and sufficient in volume to provide a substantial supply of inert gas for use in fuel tank ullage inerting purposes and the CO<sub>2</sub> does not react chemically with the fuel.
9. The composition of claim 8 wherein: hydrocarbon fuel is in the low vapor pressure to very low vapor pressure range, and uses a commercial grade of recycled carbon dioxide CO<sub>2</sub> wherein the concentration of CO<sub>2</sub> within the fuel is sufficient in volume to provide a substantial supply of inert gas for use in fuel tank ullage inerting purposes.
10. The composition of claim 8 wherein the combination of enhanced fuel by the added CO<sub>2</sub> provides an improved fuel fire safety factor when said enhanced fuel is transferred and stored.

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1 11. The composition of claim 8 wherein the combination of said fuel and said  
2 CO2 acts as a self-inerting fuel.

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4 12. The composition of claim 8 wherein the combination of said fuel with said  
5 CO2 provides that said fuel acts as a 'weightless container' for transferring and  
6 storing substantial volumes of CO2 without additional containment vessels.

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8 13. The composition of claim 8 wherein the combination of said fuel containing  
9 said CO2 wherein that concentration of CO2 in the fuel may be extracted from  
10 the fuel by mechanical means.

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12 14. The composition of claim 8 wherein the combination of said fuel and said  
13 CO2 is transferable and storable in, existing closed fuel distribution systems and  
14 fuel delivery equipment such as those used at airports and other re-fueling  
15 terminals.

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17 15. The composition of claim 8 wherein the combination of said fuel and said  
18 CO2 provides a new means for safely extending Jet-A fuel supplies by mixing in  
19 percentages of JP-4 or naphtha into CO2-enriched Jet-A.

20  
21 16. The composition of claim 8 wherein the combination of said fuel receiving  
22 said CO2 provides substantial fuel de-oxygenation during the CO2/fuel mixing  
23 process.